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HOW DO WE PAY FOR THE INFRASTRUCTURE WE NEED?

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By Bruce Upbin, VP Strategic Communications, Hyperloop One

Sixty years ago this week the U.S. embarked on one of the greatest public works projects since the Roman Empire, the Interstate Highway System. It was a bonanza of productivity for an American economy emerging with brawn from WWII, at one period yielding an annual return of 54 cents for every dollar spent. But in recent years the federal government has fallen behind on its maintenance budget by almost a third (spending \$20 billion a year of a needed \$33 billion). Congestion is on the rise and roads and bridges are often in disrepair.

The same story is played out across the world. It's one of the great underreported economic crises of our time and is one you can't see, but its impact is evident in a dizzying variety of statistics: poverty, poor health outcomes, stunted education gains, global trade waste, job immobility, pollution and inequality.

It's the infrastructure gap and not only is it huge, it's widening.

The world spends some \$2.5 trillion a year on big capital projects projects: water, power, energy, transportation and telecom. As big as that number seems, it's not keeping pace with a growing world. According to a June report from McKinsey Global Institute (<http://goo.gl/DUvGXV>), we should be spending \$3.3 trillion a year just to meet expected economic growth out to 2030.

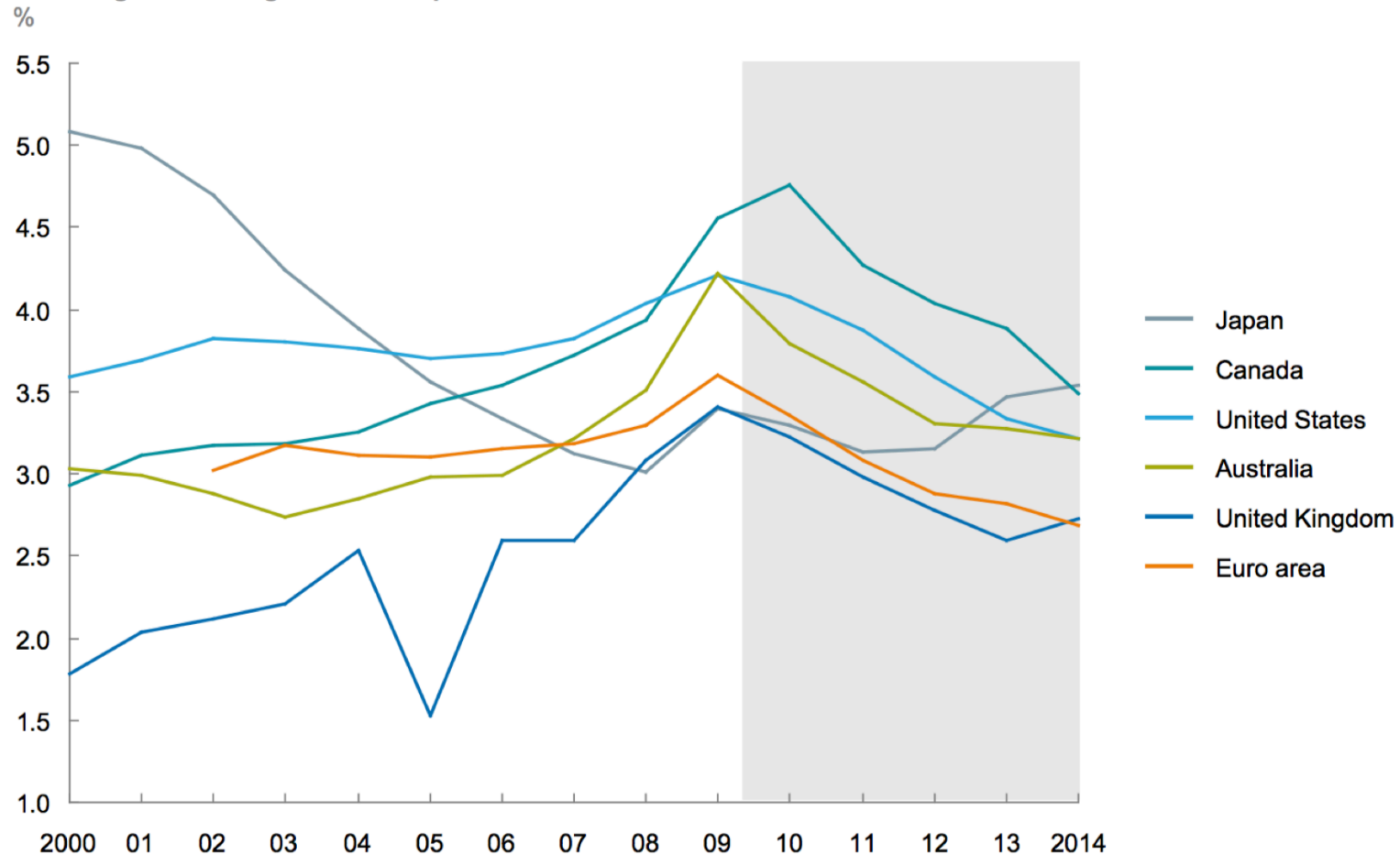
In some parts of the world, the gap can be deadly. About 768 million people worldwide lack access to clean water; 2.5 billion do not have adequate sanitation; 2.8 billion people still cook their food with solid fuels (such as wood); and one billion people live more than two kilometers from an all-weather road.

Twenty percent of the world population still has no electricity, per the World Bank.

In the developed world, the infrastructure gap is a check on growth and a pernicious hidden cost of doing business. As James Fallows wrote in the Atlantic last year (<http://goo.gl/dl3Lja>), "... democratic societies are systematically prone to spend far too little on normal civic infrastructure. Bridges, canals, new schools, new parks — we repeatedly under-imagine their benefits in the long run, and over-emphasize their hassles and costs."

Government investment has been declining in a number of major developed economies since the crisis

General government gross fixed capital formation as share of GDP



SOURCE: OECD; McKinsey Global Institute analysis

How do we close an \$800 billion annual gap? By tapping new sources of money. In addition to the billions allocated by governments each year to capital projects (a number that is unfortunately shrinking in half of the G20 countries despite all the talk of building beautiful walls) some \$120 trillion is currently locked up with banks and institutional funds that haven't gotten into the game as much as they should. Infrastructure, if done properly, can yield highly attractive returns to long-term investors such as pension and sovereign wealth funds. But private capital has been cut off from potentially game-changing infrastructure projects as a result of obsolete cross-border investment rules, a lack of transparency in project finance and lack of a good pipeline of bankable infrastructure deals.

This doesn't have to be. McKinsey Global Institute recently published a 45-page report, 'Bridging Global Infrastructure Gaps,' that lays out some compelling ideas such as enforcing standards on the infrastructure market, creating regulations that provide more certainty for investors, charging users higher fees, capturing property value increases, or selling existing assets and recycling the proceeds for new infrastructure. Public-private partnerships are gaining in popularity as a way to fund new infrastructure, but they account for only 5 to 10 percent of total investment, and are unlikely to be a "silver bullet" to solve the gap.

McKinsey sees an even bigger potential in making infrastructure spending more effective by improving project selection, delivery, and management of existing assets. Even the most advanced economies, they say, have lots of room to learn from each other.

As part of a series we're running on financing breakthrough new infrastructure, I put a few questions to Jan Mischke, senior fellow at McKinsey Global Institute, and an author of the *Bridging Gaps* report.

The report mentions "disruptive ideas in the way infrastructure is built" (one example being how China's Broad Group put up a 30-story tower in 15 days). What other examples are there of building infrastructure faster, better, cheaper?

Research has found the construction sector to be a technological laggard, with low levels of digitization and R&D spending. However, McKinsey's research has shown that emerging technologies could boost productivity by 25-30%. A new report just released (<http://www.mckinsey.com/industries/infrastructure/our-insights/imagining-constructions-digital-future>) identified five trends disrupting the construction industry: higher-definition surveying and geo-location, next generation 5-D building information management software (including integration of augmented reality devices), digital collaboration and mobility, the IoT and advanced analytics, and "future proof design and construction," which spans from new building materials, such as self-healing concrete, aerogels, and nanomaterials, to innovative construction approaches, such as 3-D printing and preassembled modules.

Which institutional investors (or which countries) you've spoken with have shown the most interest in infrastructure as an asset, as in, which funds are really closing the gap between their current holdings and allocation targets for infrastructure investment?

Our report focused on financing sustainable infrastructure (<http://www.mckinsey.com/industries/infrastructure/our-insights/next-generation-of-infrastructure>) found that private institutional investors could fill up to half the financing gap. In that report, we evaluated 8 groups of institutional investors: banks, investment companies, insurance companies and private pensions, public pensions, sovereign wealth funds, infrastructure operators and developers, infrastructure and PE funds, and endowments/foundations. The investors with the greatest value of infrastructure assets under management (AUM) are as follows: banks (\$40.2 trillion in AUM), investment companies (\$29 trillion in AUM) and insurance companies and private pensions (\$26.5 trillion in AUM). However, this report also found that it is important to note that one of the biggest barriers is not the availability of capital, but rather the lack of a transparent pipeline of bankable projects for investors.

Another report from MGI, "Diminishing Returns (<http://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/why-investors-may-need-to-lower-their-sights>)," noted that a continuing environment of low interest rates and low returns could lead life insurers to reexamine their investment strategies, and therefore they could look toward longer-dated and less liquid assets with a higher expected return, such as infrastructure investments, or commercial real estate (particularly given recent reductions in Solvency II risk charges for such investments).

More broadly, McKinsey's asset management practice research shows that investment flows are increasingly moving away from active investment in equities, and toward passive equities, active or passive fixed income, or to alternatives and multi-asset products. This trend could be exacerbated by low returns. In a low-return era, the proportion of returns given up to management fees in a high-return period becomes less acceptable. To confront this, asset managers may have to rethink their investment offerings. One option would be for them to include more alternative assets such as infrastructure and hedge funds in the portfolios they manage. Such alternative assets already account for about 15 percent of assets under management globally today, and flows into such alternative investments have outpaced flows into more traditional assets by three to six times.

A new class of financing vehicles to get construction projects off the ground are emerging with names like venture fund structures or early concept development units. Can you tick off some examples?

The sustainable infrastructure report referenced above cites the following: The International Finance Corporation's (IFC) InfraVentures (http://www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Infrastr) unit helps to develop projects, but also takes equity stakes in them as well, which helps to attract other financing. Funds like InfraCo (<http://www.infraco.com/>), a publicly funded, privately managed early-stage financier of projects in developing countries, have succeeded in such challenging markets as Kenya, Uganda, and Zambia.

What's the state of the art in property value capture, in which the project developer is paid from the increased value of surrounding real estate? Is it a growing trend? Spain went so far as to anchor the notion of property value capture in its constitution.

One of the best-known examples is MTR in Hong Kong, where land value capture funds much of the rail build-up as well as affordable housing programs. The CEO of MTR authored an article for our Global Infrastructure Initiative publication (<http://www.globalinfrastructureinitiative.com/article/%E2%80%9Crail-plus-property%E2%80%9D-model-hong-kong%E2%80%99s-successful-self-financing-formula>) that lends additional insights. Singapore has traditionally bought up private land before redeveloping, thus capturing land value increases. More recently, the cantons of Switzerland are in the process of instituting property value uplift taxes.

Changes in government accounting (specifically capitalizing infrastructure investment over time versus expensing it all at once) could unlock more investment by not blowing such a big hole in federal and state budgets. How much do we know about how to account for social returns and depreciation rates for long-term, broadly used investments such as new transportation?

There is both wide uncertainty and wide divergence between individual projects. For transportation, depreciation rates of 2.5% annually are typical. From top-down econometric analyses, socio-economic returns of about 20% on investment are typical. Bottom-up cost-benefit analyses, that account also for non-GDP impact, are often above 30%. One of the stumbling blocks is that public infrastructure assets often do not have dedicated revenue streams attached to them that could be securitized, and long-term tax uplifts are difficult to measure.

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